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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,350	03/08/2001	Trenton John Grale	1121-CA	4188
20284	7590	10/22/2003	EXAMINER	
CIRRUS LOGIC, INC. CIRRUS LOGIC LEGAL DEPARTMENT 2901 VIA FORTUNA AUSTIN, TX 78746			DINH, PAUL	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,350

Applicant(s)

GRALE ET AL.

Examiner

Paul Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8 and 10-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 10-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

This is a response to the applicant amendment/remarks filed on 9/22/03.

The amendment with the newly added limitations to independent claims:

(Claims 1, 4) “a topology of the delta sigma modulator configurable in response to at least one program to implement a corresponding one of the delta sigma algorithms”;

(Claim 5) “sampling rates, the delta sigma modulator configurable in response to a selected program to selected a delta sigma data rate”; and

(Claims 6, 8) “the programmable delta sigma modulator (having a topology) configurable in response to at least one program to implement a corresponding (one) delta sigma algorithm”;

Does not overcome the prior art; therefore, the previous rejections are retained and repeated for the following reasons, and

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action, see the following details.

Specification

Specification page 2, “U.S. Patent 6,434,231” is a typographical error and need to be changed to “U.S. Patent 6,434,213”.

Claim Objections

Claim 5 is objected to because the newly added limitation “sampling rate” finds no clear support in the specification. See 37 CFR 1.75 (d).

Claim 16 is objected to because “register file” is not clearly described in the specification. See 37 CFR 1.75 (d).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2, 4-6, 8, 10-20 are rejected under 35 U.S.C. 102(b) as being anticipated by McGrath et al. (USP 5345409) who discloses a modulator/IC/method comprising:

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(Claim 1) a modulator (120 of fig 1) for receiving sample values and generating digital signals using selectable programs (c19: 8-13/c6: 55/c17: 51-52/c22: 2-4/fig 1, 3, 7/tables 2, 5) for implementing respective delta sigma algorithms (c21: 55+), a topology of the delta sigma modulator configurable in response to at least one program (c19: 8-13/c6: 55/c17: 51-52/c22: 2-4/fig 1, 3, 7/tables 2, 5) to implement a corresponding one of the delta sigma algorithms (c21: 55+).

(Claim 2) fig 1-15 and/or c19-21 teaches selectable order N, where N is an integer greater than or equal to one (c19: 49+/c20: 9).

(Claim 4) an IC (10 of fig 1 or c4: 18+) containing a delta sigma modulator (120 of fig 1) programmable (c19: 8-13/c6: 55/c17: 51-52/c22: 2-4/fig 1, 3, 7/tables 2, 5/title/field of invention) to implement different delta sigma algorithms (c21: 55+), a topology of the delta sigma modulator configurable in response to at least one program (c19: 8-13/c6: 55/c11: 21-22/c17: 51-52/ c22: 2-4/fig 1, 3, 7/table 2, 5) to implement a corresponding one of the delta sigma algorithms (c21: 55+).

(Claim 5) an IC (10 of fig 1 or c4: 18+) containing a delta sigma modulator ((120 of fig 1) programmable (c19: 8-13/c6: 55/c17: 51-52/c22: 2-4/fig 1, 3, 7/tables 2, 5/title/field of invention) to implement different delta sigma sampling rates (c13: 39/c14-15/fig 14), the delta sigma modulator configurable in response to a selected program (c19: 8-13/c6: 55/c11: 21-22/c17: 51-52/ c22: 2-4/fig 1, 5-8, 11-15/tables 2, 5) to selected a delta sigma data rate (c11: 15+/c13: 27+/c14-15/fig 1).

(Claims 6, 8) providing a programmable delta sigma modulator (120 of fig 1 and c19: 8-13/c6: 55/c17: 51-52/c22: 2-4/fig 1, 3, 5-8, 11-15/tables 2, 5/title/field of invention); the programmable delta sigma modulator (having a topology) configurable in response to at least one program (c19: 8-13/c6: 55/c11: 21-22/c17: 51-52/ c22: 2-4/fig 1, 3, 7/tables 2, 5) to implement a corresponding (one) delta sigma algorithm (c21: 55+).

(Claim 10) fig 1, 3-8, 11-13 or c6-8, 12 and/or tables c16-20 teach selecting a coefficient set from among plural coefficient sets.

(Claim 11) different algorithms are implemented (using) by changing a particular architecture of corresponding circuitry (fig 1-15) used to perform operations in response to at least one control signal (abstract line 9/c2: 52/fig 1/3-6)

(Claim 12) fig 5-6, 8 and/or 10-12 teaches multipliers.

(Claim 13) using no multipliers but only shifts and adds (fig 6, 11, 15, c4, table 2)

(Claim 14) c11/14/21 teach pipeline architecture.

(Claim 15) hybrid memory system fig 1, 3-4, 7, c18.

(Claim 16) fig 1/3-4/6-/15/c12-14, c18/tables 2-5 teaches register file arrangement.

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(Claim 17) fig 3 teaches a sequencer.

(Claims 18-19) fig 1 shows two delta sigma modulators each having an independently controllable output delay

(Claim 20) fig 15, table 2 teaches independently controllable delay is a shift register with selectable number of active stages.

2. Claims 1-2, 4-6, 8, 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Knudsen (USP 5781137) who discloses a modulator/IC/method comprising:

(Claim 1) a modulator (fig 1, 3, 7-8) for receiving sample values and generating digital signals using selectable programs (100 of fig 8) for implementing respective delta sigma algorithms (abstract/summary/fig 11-12), a topology of the delta sigma modulator configurable in response to at least one program (100 of fig 8) to implement a corresponding one of the delta sigma algorithms (abstract/summary/fig 11-12).

(Claim 2) selectable order N, where N is an integer greater than or equal to one (c7: 27).

(Claim 4) an IC (c1/c3) containing a delta sigma modulator (fig 1, 3, 7-8) programmable (100 of fig 8) to implement different delta sigma algorithms (abstract/summary/fig 11-12), a topology of the delta sigma modulator configurable in response to at least one program (100 of fig 8) to implement a corresponding one of the delta sigma algorithms (abstract/summary/fig 11-12).

(Claim 5) an IC (c1/c3) containing a delta sigma modulator (fig 1, 3, 7-8) programmable (100 of fig 8) to implement different delta sigma sampling rates (c1-2/c5/fig 13), the delta sigma modulator configurable in response to a selected program (100 of fig 8) to selected a delta sigma data rate (c1: 56+, c2, c7: 22-23).

(Claims 6, 8) providing a programmable delta sigma modulator (fig 1, 3, 7-8); the programmable delta sigma modulator (having a topology) configurable in response to at least one program (100 of fig 8) to implement a corresponding (one) delta sigma algorithm (abstract/summary/fig 11-12).

(Claim 10) fig 9, 14 teach selecting a coefficient set from among plural coefficient sets.

(Claim 11) different algorithms are implemented (using) by changing a particular architecture of corresponding circuitry (fig 1, 3, 5, 7-8) used to perform operations in response to at least one control signal (c3: 45-47)

(Claim 12) c10: 59 teach multipliers.

3. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Norsworthy (USP

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5420584) who discloses a modulator/IC/method comprising:

an IC containing a delta sigma modulator (see modulator in fig 1) programmable (c5-6/
/abstract/summary/fig 1-3/c2: 16-43/ c3: 6-9/c4: 17-32) to implement different delta sigma sampling rates
(abstract/summary/c2, 4), the delta sigma modulator configurable in response to a selected program
(c5-6/abstract/summary/fig 1-3/c2: 16-43/ c3: 6-9/c4: 17-32) to selected a delta sigma data rate
(abstract/summary/c2, 4)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a), which forms the basis for all obviousness rejections, set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McGrath et al. (USP 5345409) and/or Knudsen (USP 5781137) in view of Keevill et al. (USP 6359938) and/or Norsworthy (USP 5457456)

McGrath/Knudsen discloses substantially all the elements in claim 3 except a FIFO to store sample values.

Keevill discloses in c17: 13-14, a FIFO to store sample values.

Norsworthy discloses in c3: 56+/c5: 39+, a FIFO to store sample values.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a FIFO to store sample values because FIFO memory is well known in the art for storing/buffering sample values/data/signals, etc...

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH**

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shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is (703) 305-5662. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (703) 308-1323. The fax number for the organization handling this application is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Paul Dinh

Patent Examiner



MATTHEW SMITH
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